

## CLAIMS

1. Steel for the production of high-strength components with excellent low-temperature toughness, having the following composition (in % by weight):

C: 0.08 to 0.25 %,  
Si: 0.10 to 0.30 %,  
Mn: 0.80 to 1.60 %,  
P: = 0.020 %,  
S: = 0.015 %,

the sum of the P and S content being = 0.030 %,

Cr: 0.40 to 0.80 %,  
Mo: 0.30 to 0.50 %,  
Ni: 0.70 to 1.20 %,  
Al: 0.020 to 0.060 %,  
N: 0.007 to 0.018 %,  
V: = 0.15 %,  
Nb: = 0.07 %,

the sum of the V and Nb content being = 0.020 %, the remainder being iron and inevitable impurities.

2. Steel according to Claim 1, characterised in that its C content is from 0.16 % by weight to 0.23 % by weight.

3. Steel according to any one of the preceding claims, characterised in that its Mn content is from 1.00 % by weight to 1.35 % by weight.

4. Steel according to any one of the preceding claims, characterised in that its Cr content is from 0.40 % by weight to 0.65 % by weight.

5. Steel according to any one of the preceding claims, characterised in that its Mo content is from 0.35 % by weight to 0.50 % by weight.

6. Steel according to any one of the preceding claims, characterised in that its Ni content is from 0.75 % by weight to 1.00 % by weight.

7. Steel according to any one of the preceding claims, characterised in that its Al content is from 0.020 % by weight to 0.045 % by weight.

8. Steel according to any one of the preceding claims, characterised in that its N content is from 0.007 % by weight to 0.015 % by weight.

9. Steel according to any one of the preceding claims, characterised in that it has an austenite grain size that is finer than ASTM 10.

10. Use of a steel composed according to any one of the preceding claims for the production of high-strength components by cold forming with subsequent temper-hardening.

11. Use according to Claim 10, characterised in that the components are means for the carrying, pulling, lifting, conveying or securing of loads.

12. Use according to Claim 10, characterised in that the components are means for the connection of structural elements.

13. Use according to any one of Claims 10 to 12, characterised in that the components are chains.

14. Use according to Claim 13, characterised in that the chains are round steel chains.
15. Use according to either Claim 13 or Claim 14, characterised in that the chains are welded.
16. Use according to any one of Claims 10 to 15, characterised in that the components have a strength of at least 1,200 MPa.
17. Use according to Claim 16, characterised in that the strength is at least 1,550 MPa.
18. Use according to either Claim 16 or Claim 17, characterised in that the strength is at least 1,600 MPa, in particular at least 1,650 MPa.
19. Use according to any one of Claims 10 to 18, characterised in that at a strength of at least 1,550 MPa, the fracture appearance transition temperature FATT of the components is at most -60 °C.
20. Use according to any one of Claims 10 to 19, characterised in that the notch impact working value is more than 45 J.
21. Use according to any one of Claims 10 to 20, characterised in that the material of the component has a technical crack initiation toughness  $J_{IC}$  of more than 170 N/mm<sup>2</sup>.
22. Use according to Claim 21, characterised in that the technical crack initiation toughness  $J_{IC}$  is more than 185 N/mm<sup>2</sup>.

23. Use according to any one of Claims 10 to 22,  
characterised in that the components exhibit an elongation at  
break of more than 28 %.